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**MANFORD**

POWER & DETERMINATION

5 AXES MACHINING CENTER



5 AXES MACHINING CENTER

VU-620



MACHINE WEIGHT  
**8,200 kgs**

About VU-620

Turnkey solution of VU-620 product line enables Manford to process and optimize parts efficiently, enhance productivity and accuracy. VU-620 adopts low-pollution components and complies with eco-friendly regulations. Occupying compact floor dimensions is also one of the features of VU-620.



CNC Control	Heidenhain TNC640 / Siemens ONE
X Travel	620 mm (24.4")
Y Travel	520 mm (20.4")
Z Travel	460 mm (18.1")
Spindle Nose to Table Surface	150 ~ 610 mm (6" ~ 24")
Table Diameter	Ø650 mm (25.6")
T-slot (size x Q'ty x dist.)	18 mm x 5 x 100 mm
Table Load Capacity	300 kgs (horizontal) 200 kgs (tilting)
B-Axis Tilting Range	-50° ~ +110°
C-Axis rotating Range	360°

Spindle Transmission	direct drive type (opt.: Built-in)
Spindle Taper	BBT40 / HSK-A63
Spindle Speed	12,000 rpm (opt.: 20 ,000 rpm)
Spindle Motor	*10 ~ 12.5 kW
Rapid Feedrate (X/Y/Z)	36 / 36 / 36 M/min
ATC Capacity	32 tools (opt.: 40/60 tools)
Max. Tool Diameter	full: Ø75 mm (3") next empty: Ø130 mm (4.9")
Dimensions	2,200 x 3,320 x 3,100 mm
Machine Weight	8,200 kgs

\* Spindle motor power depends on motor selection



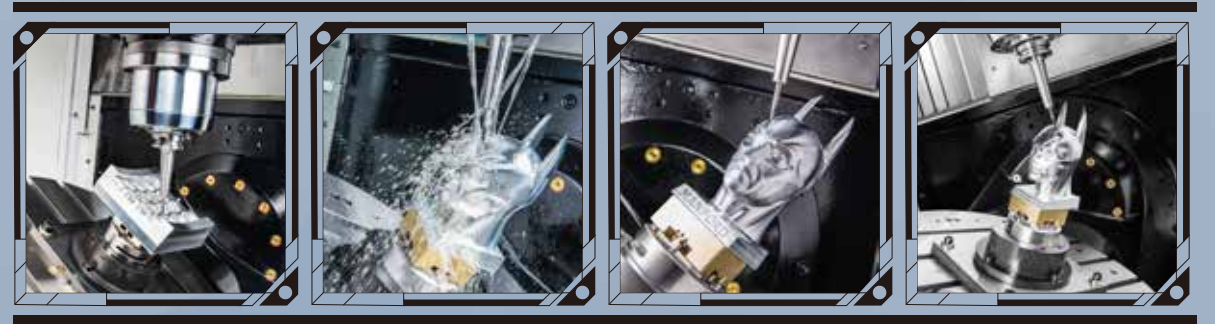
# VU-620

## 5 AXES MACHINING CENTER



### Wide-opened Door

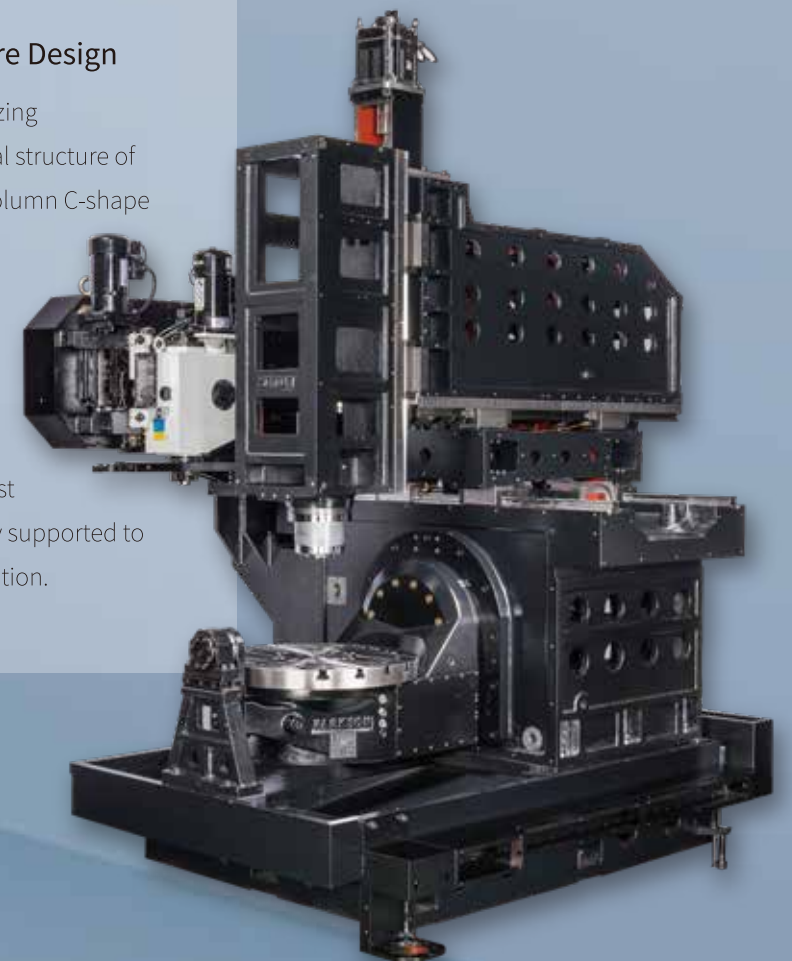
Twin-doors design allows max. open space for loading & unloading workpiece.  
Control panel with 160° swivel design is convenient for operators to adjust in different angles.



### Movable Column C-shape Structure Design

Guided by Finite Element Analysis and utilizing high-tension Meehanite casting, mechanical structure of VU-620 reaches optimal design. Movable column C-shape provides the best rigidity.

Column is made of one-piece thick rib structure, 4 large-sized linear guide way blocks on each side of column well supports saddle to remain steady during fast machining movement. Spindle head is fully supported to provide high accuracy cutting without vibration.



VU-620

## 5 AXES MACHINING CENTER

**Mechanical strength**

Mechanical strength sustains heavy cutting and long-term excellent accuracy.

X, Y, and Z axes are standard with roller type linear guide ways which features low friction and is free of stick-and-slip problems.

**3 Axes**

All axes are direct driven by AC servo motors with absolute encoder which provides powerful thrust and fast acceleration. Such characteristics are especially suitable for high speed 3D cutting. The surface finishing is remarkable. No polishing is needed.

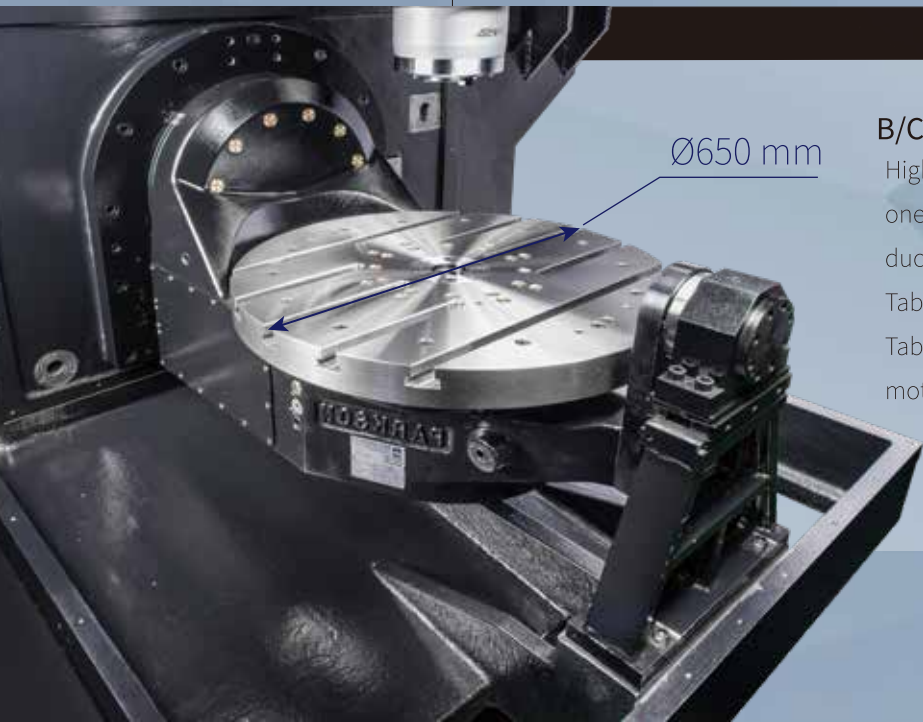
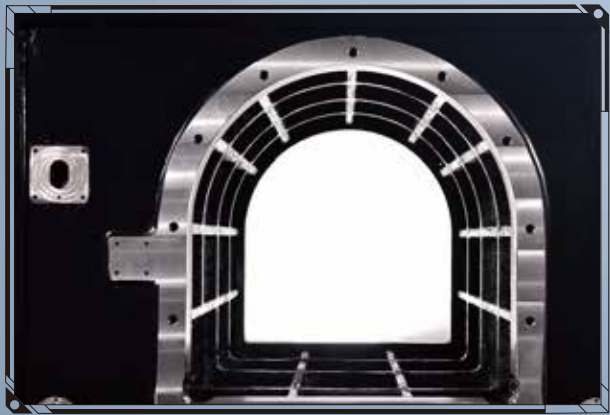
**Scraper Type Chip Conveyor**

Standard with Scraper Type Chip Conveyor is suitable for aluminum chips.



Spindle

BBT40 taper provides a firmer grip to the tools, which prevents tool vibration that affects machining accuracy. Spindle selection has direct type or built-in type.



Ø650 mm

B/C Axes

High performance B/C rotary table is made of one-piece cast iron which provides excellent ductility and greater anti-vibration ability. Table load is up to 300kgs (0° ~ 45°). Table selection: worm gear, roller cam, or DD motor.

Heidenhain TNC 640



Control panel of 19" multi-point touch screen made with tempered glass to prevent wrong pressing in operation. Operators can view comfortably with large screen with height from 1.7M to 2.0M. Keyboard is equipped with angle adjustment for everyone to adopt ergonomically with VU-620.

Siemens ONE



19" operation panel size is available. Siemens ONE is designed with LED light in framework which every button can be viewed easily. Data acquirement and analysis of energy consumption can be executed by the function of "Ctrl-E Energy Analysis". SINUMERIK Safety Integrated provides operators better safety working circumstance. For instance, protective door will be closed-up automatically when machine is under setting or testing operation.



Auto Lubrication System

Standard with Japan LHL grease lubrication system. LHL system provides more eco-friendly and protection to environment. Oil consume is 90% less comparing to other normal lubrication system. Cutting coolant is cleaner with this grease system.

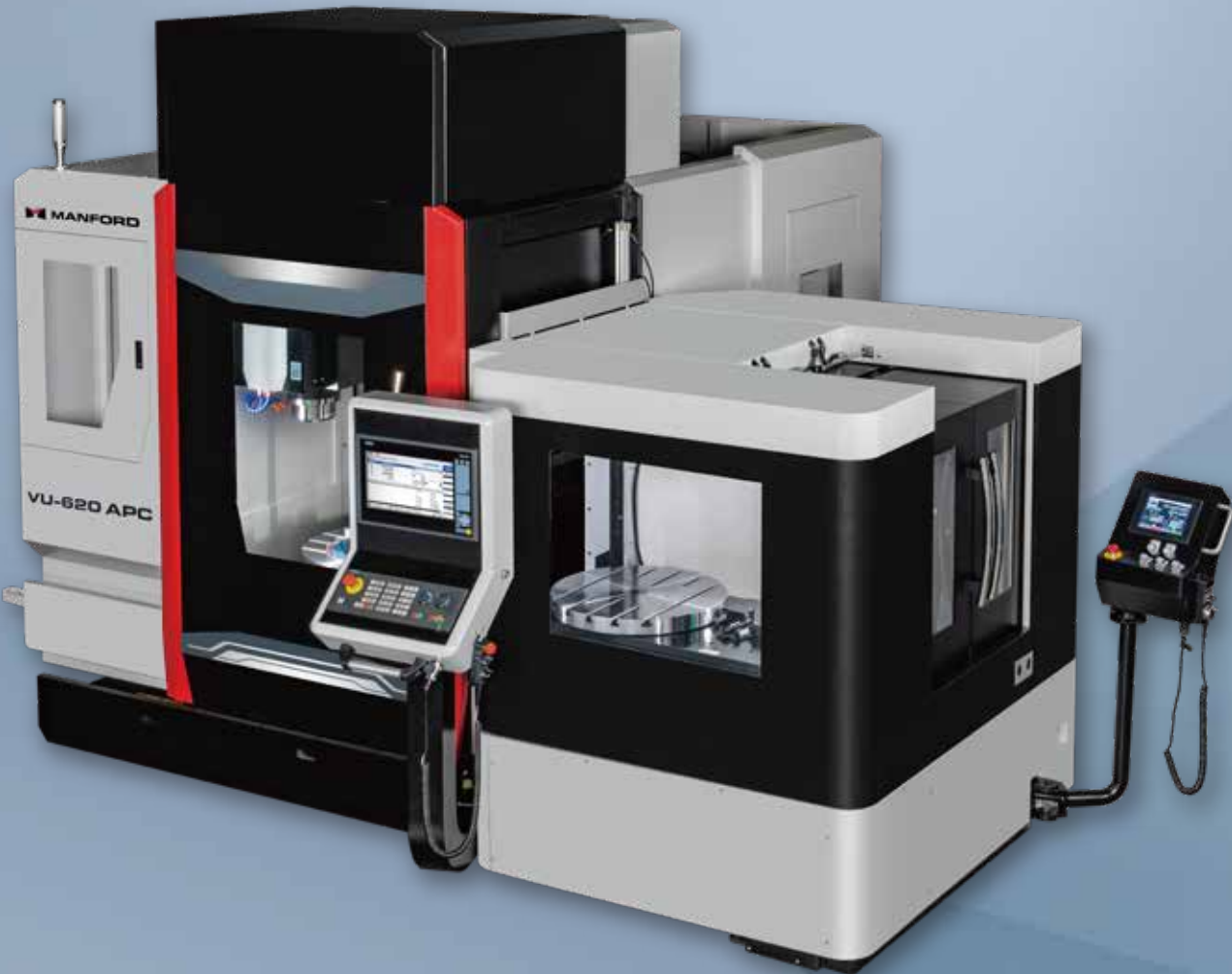
# VU-620 APC



## AUTO PALLET CHANGER

In this competitive field of manufacturing and factory production, it is always make sense to consider how to optimize machines and minimize its non-productive periods.

This idea could apply across many fields: from automotive, aerospace, electronics industries to spare part manufacturing.



### Advantages

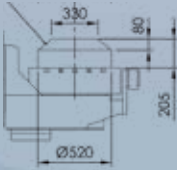
Automatic pallet changer (APC) could shorten the time of setting up workpiece, completing all machining sequence and minimize operator interference or errors. Multiple machining centers can be linked to form a complete manufacturing system, which should greatly improve cost effectiveness and productivity.



### Features

- With servo motor driven and hydraulic gear rack system, it has more loading capacity, higher speed and higher accuracy.
- Position pin will be used for positioning and locking the rotary table tightly.
- Multiple pallets will be able to reduce the stagnation time caused by load / unload workpiece.
- Flexible manufacturing unit to meet the needs of mixed and unmanned line production.
- Users can expand the quantity of pallet and tools according to their requirement.

### Specification of Automatic Pallet Changer (APC)

Pallet Size	φ650	mm
Max. Load of Pallet	300	kgs
Drive Power Source	ABS servo motor	
Pallet Change Time	60	sec.
Workpiece Dimension		mm



# VU-620 APC

## AUTO PALLET CHANGER



### VU-620 APC stands for

APC is designed with user-friendly operation interface.

Customized production line design could provide more efficient turnkey solution to the customer.

### APC (2 Pallets)

Full package including swiveling rotary table

Pallet size: Ø650 mm

300 kgs of maximum load capacity and workpieces up to Ø520 mm in diameter per pallet.

Dimensions of simply 1,750 x 1,750 mm

Pallet change time: 60 secs

Drive power source: servo motor



### APC (6 pallets)

Pallet size: 500 x 500 mm

200 kgs of maximum load capacity and workpieces up to Ø520 mm in diameter per pallet.

Dimensions of simply 2,200 x 2,200 mm

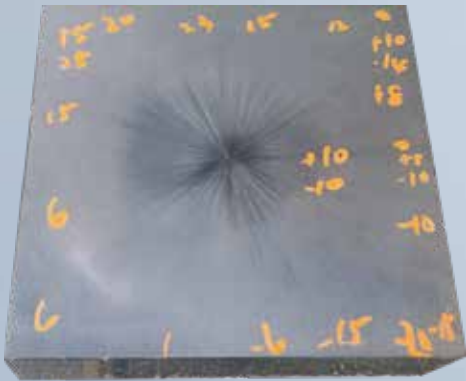
Pallet change time: 60 secs



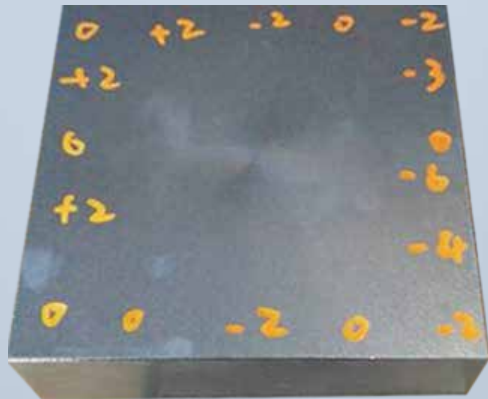
High-precision machining test

The VU-620 five-axes machine performs dynamic cutting test according to NASA979 standard, and the true roundness measured value is within 0.01 mm.

Before compensation:



After compensation: 20μm



Thermal Compensation (optional)

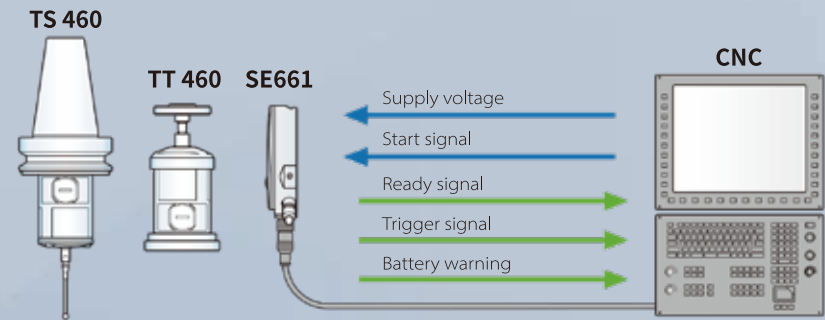
With Thermal Compensation, machining precision and product level are improved. It also increases the added value of the machine.

There are temperature sensors, break detection and temperature anomalies detection with built-in power supply module.

No need to warm up the machines. It's suitable for running long hours.



Heidenhain Tool Measurement



Heidenhain Linear Scale



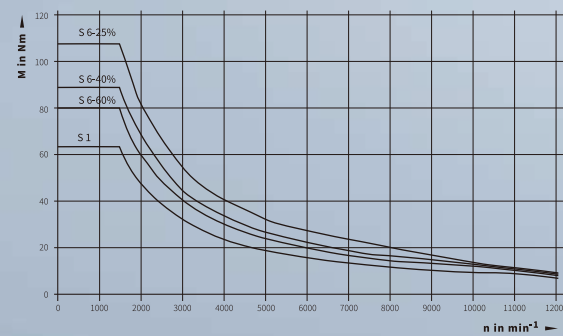
Accuracy grade: 5 μm



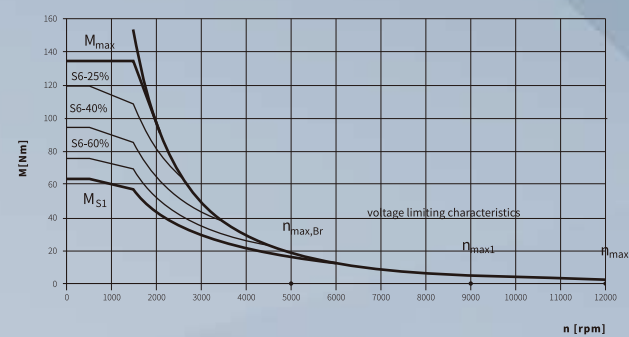
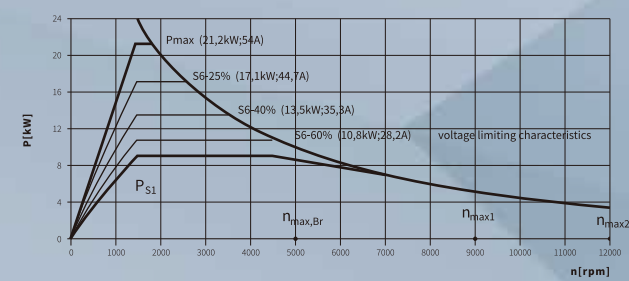
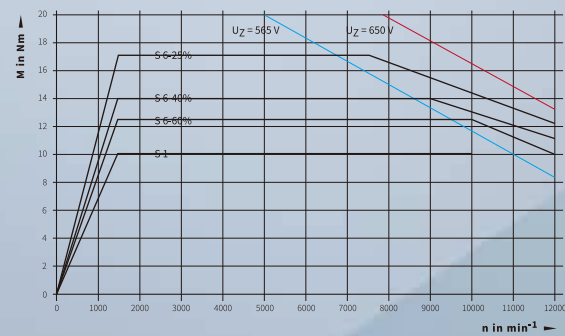
## Heidenhain TNC 640 (QAN 200U )

Mode of operation	Speed n	Power P	Torque M	Current I
S1	1,500 rpm	10.0 kW	63.7 Nm	25.0 A
	10,000 rpm	10.0 kW	9.5 Nm	-
	12,000 rpm	8.0 kW	6.4 Nm	-
S6-60%	1,500 rpm	12.5 kW	79.8 Nm	29.0 A
	10,000 rpm	12.5 kW	11.9 Nm	-
	12,000 rpm	10.0 kW	8.0 Nm	-
S6-40%	1,500 rpm	14.0 kW	89.4 Nm	32.0 A
	9,000 rpm	14.0 kW	19.1 Nm	-
	12,000 rpm	11.0 kW	8.8 Nm	-
S6-25%	1,500 rpm	17.0 kW	108.6 Nm	37.0 A
	7,500 rpm	17.0 kW	21.7 Nm	-
	12,000 rpm	12.0 kW	9.5 Nm	-

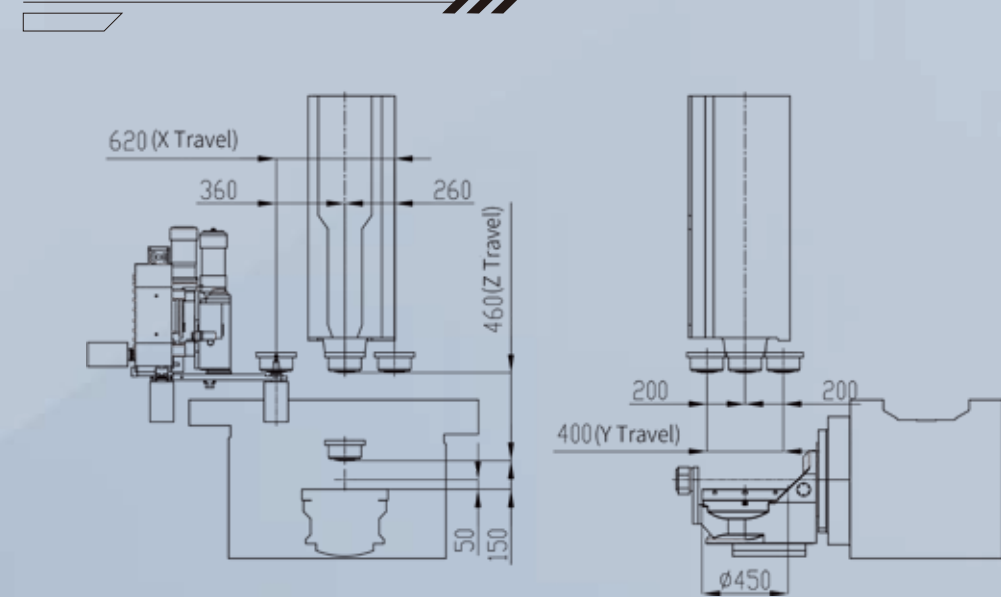
### Torque characteristic curve



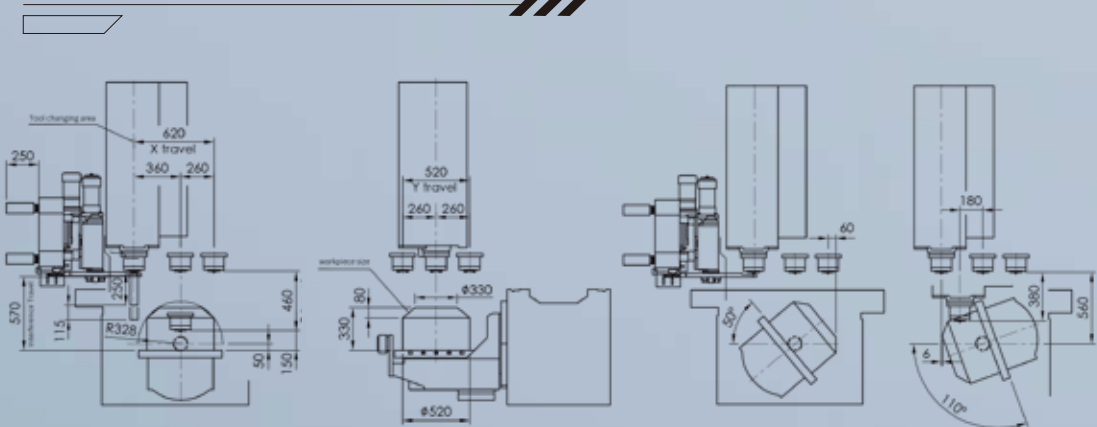
### Power characteristic curve

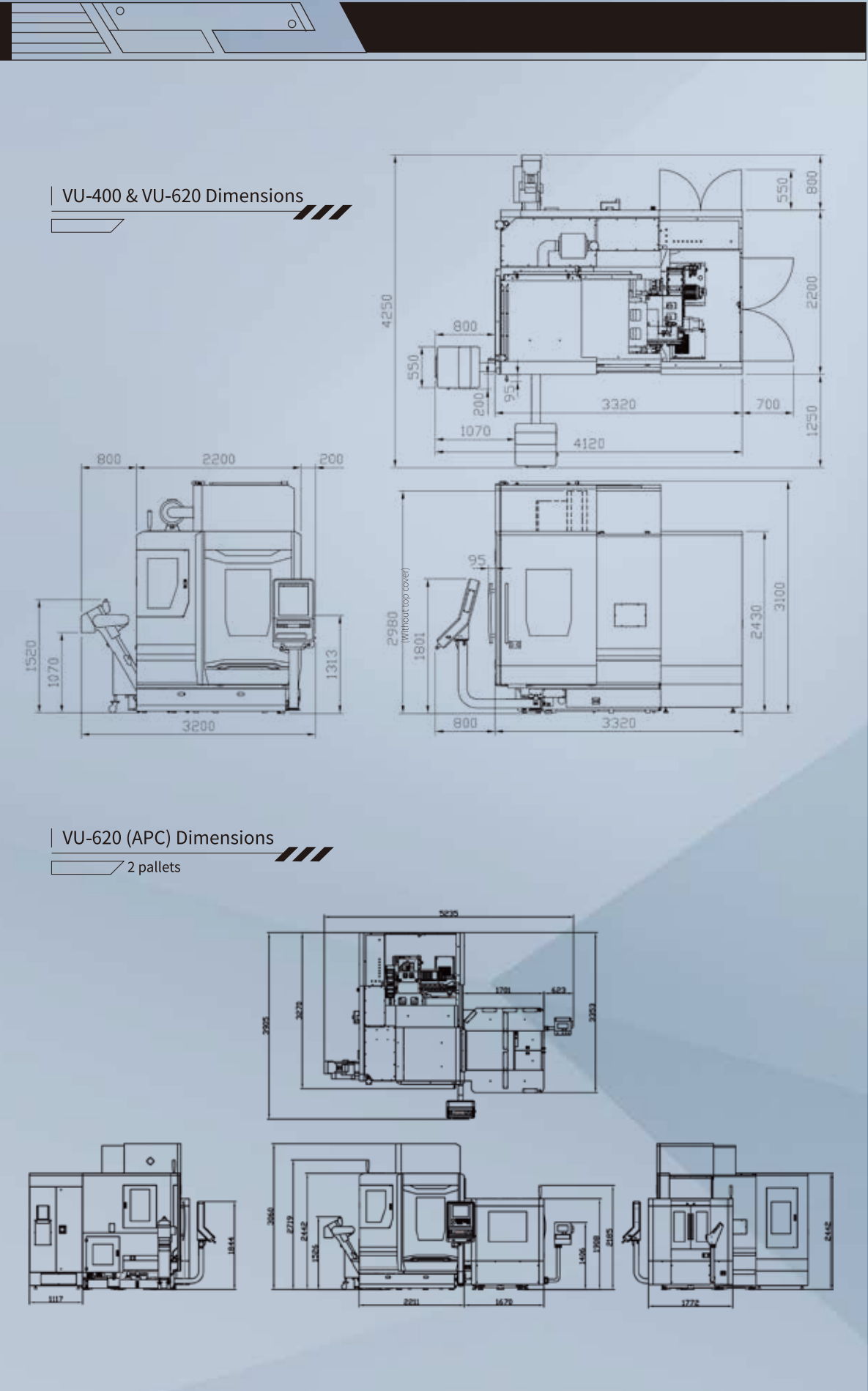


| VU-400 Cutting Area & Interfere Area



| VU-620 Cutting Area & Interfere Area





		VU-400	VU-620
Specification	TRAVEL		
	X Travel	mm 620	620
	Y Travel	mm 400	520
	Z Travel	mm 460	460
	Spindle Nose to Work Table Distance	mm 150 ~ 610	150 ~ 610
WORKTABLE	Work Table Dimension	mm Ø450	Ø650
	Work Table Capacity	kgs horizontal: 200, tilting: 150	horizontal: 300, tilting: 200
	T-slot Dimension (size x Q' ty x dist.)	mm 14 (ring type) mm x 8 x 45°	18 mm x 5 x 100 mm
SPINDLE	Spindle Speed	rpm 12,000	12,000
	Spindle Type	- direct drive type	direct drive type
	Spindle Taper	- BBT40	BBT40
ATC	Tool Taper	- BBT40	BBT40
	Tool Capacity	T chain type 32 tools	chain type 32 tools
FEEDRATE	Rapid Feedrate (X/Y/Z)	M/min 36 / 36 / 36	36 / 36 / 36
	Cutting Feedrate	M/min 1 ~ 15 M/min	1 ~ 15 M/min
ACCURACY	Three Axes Positioning Accuracy	mm P: 0.01	P: 0.01
	Repeatability Accuracy	mm Ps max.: 0.006	Ps max.: 0.006
CONTROLLER	Brand	Heidenhain/ Siemens	Heidenhain / Siemens
DIMENSIONS	Height	mm 3,100	3,100
	L x W	mm 2,200 x 3,320	2,200 x 3,320
	Dimension When Door Open	mm 3,000 x 4,020	3,000 x 4,020
	Weight (approx.)	kgs 8,200	8,200

★NOTE: Specifications are subject to change without notice.

Standard Accessories		Optional Accessories
▪ B/C axes with encoders	Coolant gun	▪ 15,000 rpm spindle
▪ Remote handwheel	Air gun	▪ 24,000 rpm spindle
▪ LHL center lubrication system	Spindle oil cooler	▪ CTS 30 bars / 70 bars
▪ Full guarding	LED work light	▪ 40 tools ATC
▪ Air conditioner for electrical cabinet	Program light 3 colors	▪ 60 tools ATC
▪ Scraper type chip conveyer	Leveling bolts & plate	▪ Linear scales
▪ Hydraulic system	Tools & box	▪ Thermal compensation
		▪ Tool length measurement
		▪ Workpiece measurement
		▪ CE